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of the cold fact that the exceptional cases are absolutely not to be tolerated.

"I would not have a single person," says Mr. Smith, "miss the great fun and superior advantage of camping out during the tour of the park because of the fear of the bears." Mr. Smith is pedantic in his choice of words. It is purely a question of vermin. And Mr. Smith, who boldly routs marauding bear with Roman candles, perhaps, if properly armed, he would not be afraid even of a bed bug.

W. S. FRANKLIN

#### SCIENTIFIC BOOKS

*An Illustrated Flora* of the Northern United States, Canada and the British Possessions from Newfoundland to the parallel of the southern Boundary of Virginia, and from the Atlantic Ocean westward to the 102d Meridian. By NATHANIEL LORD BRITTON, Ph.D., Sc.D., LL.D., Director-in-Chief of the New York Botanical Garden, Professor in Columbia University, and HON. ADDISON BROWN, A.B., LL.D., President of the New York Botanical Garden. The descriptive text chiefly prepared by PROFESSOR BRITTON, with the assistance of specialists in several groups; the figures also drawn under his supervision. Second edition, revised and enlarged. In three volumes: Vol. I., *Ophioglossaceae* to *Polygonaceae*, Ferns to Buckwheat (pp. xxix + 680); Vol. II., *Amaranthaceae* to *Loganiaceae*, Amaranth to Polypremum (pp. iv + 735); Vol. III., *Gentianaceae* to *Compositae*, Gentian to Thistle (pp. iv + 637). Octavo. New York, Charles Scribner's Sons. 1913.

Nearly seventeen years ago the writer of this review had the pleasure of making a notice<sup>1</sup> of the first volume of "a new manual of systematic botany," the same being the first edition of the book now before us. Two sentences in that review may be reproduced here.

It is in every way a new work—new in its plan, new in its descriptions, new in its illustrations. . . . It will give renewed life and vigor to sys-

tematic botany, and doubtless will be the means by which many a student will be led to the study of the more difficult families.

Less than two years later in a notice of the third volume<sup>2</sup> the writer commented upon the "Rochester nomenclature" of the work, and said:

It is inevitable that one result of its publication ["*Illustrated Flora*"] will be that the number of those actively opposing these modern features will rapidly grow less. It will soon be much easier to follow the modern innovations along the plain highway here made than to continue in the less and less frequented paths of the conservatives.

These prophecies have long since come to pass, and their quotation now enables us to see how far we have traveled since they were written. When the original volumes were written they seemed very radical, and almost revolutionary, but now as one runs them over they have lost their radicalness, and do not appear at all revolutionary. In their latest version, in this second edition, even the conservative reader finds little that will shock him. In these years we have moved very far in our notions as to systematic botany, and the "*Illustrated Flora*" has been a potent force in bringing about this change. The authors are to be congratulated for the part they have played in this revolution in systematic botany.

Comparing the present edition with the first we find that the whole number of species has risen from 4,162 to 4,666, while the genera have increased from 1,103 to 1,229, and the families from 177 to 194. Of the grasses (*Gramineae*) the first edition contained 371 species, while in the second there are 466. So the species of *Carex* are increased from 205 to 242. The *Compositae*, in the wider sense (including also *Cichoriaceae* and *Ambrosiaceae*) are increased from 569 to 625.

The treatment of *Crataegus* in the two editions may well be contrasted. In the first edition 15 species are recognized as occurring within the range covered by the "*Flora*," and the remark is made that "four or five others

<sup>1</sup> *Am. Nat.*, October, 1896.

<sup>2</sup> *SCIENCE*, August 12, 1898.

occur in the southern and western parts of North America," and for the genus, as a whole, it is said that there are in the world "about 50 species, natives of the north temperate zone, Mexico and the Andes of New Granada." In the second edition 73 species are figured and described from the same range, while the following statement is made for the genus as a whole. "About 300 species, natives of the north temperate zone, the tablelands of Mexico and the Andes; the center of distribution is the eastern United States." The genus has been of great taxonomic interest for ten years, about 1,000 species having been described from the United States during that period. Data are fast accumulating tending to show that many of these newly described species are hybrids.

In the Introduction (pp. ix, x) one finds the following condensed version of the "American Code," which takes the place of the longer statement in the first edition:

1. The nomenclatorial type of a species or subspecies is the specimen to which the describer originally applied the name in publication.
  - (a) When more than one specimen was originally cited, the type or group of specimens in which the type is included may be indicated by the derivation of the name from that of the collector, locality or host.
  - (b) Among specimens equally eligible, the type is that first figured with the original description, or in default of a figure the first mentioned.
  - (c) In default of an original specimen, that represented by the identifiable figure or (in default of a figure) description first cited or subsequently published, serves as the type.
2. The nomenclatorial type of a genus or subgenus is the species originally named or designated by the author of the same. If no species was designated, the type is the first binomial species in order eligible under the following provisions:
  - (a) The type is to be selected from a subgenus, section or other list of species originally designated as typical. The publication of a new generic name as an avowed substitute for an earlier invalid one does not change the type of a genus.

- (b) A figured species is to be selected rather than an unfigured species in the same work. In the absence of a figure, preference is to be given to the first species accompanied by the citation of a specimen in a regularly published series of exsiccatae. In the case of genera adopted from prebinomial authors (with or without change of name), a species figured by the author from whom the genus is adopted should be selected.
- (c) The application to a genus of a former specific name of one of the included species, designates the type.
- (d) Where economic or indigenous species are included in the same genus with foreign species, the type is to be selected from (1) the economic species or (2) those indigenous from the standpoint of the original author of the genus.
- (e) The types of genera adopted through citations of nonbinomial literature (with or without change of name), are to be selected from those of the original species which receive names in the first binomial publication. The genera of Linnæus's "Species Plantarum" (1753) are to be typified through the citations given in his "Genera Plantarum" (1754).

Enough has been said to show that the new edition differs so much from the earlier one that it must find a place upon the shelves of every botanical library.

It only remains to be said that while the new edition was passing through the press Judge Brown closed his labors, but not before he had seen the pages of the new book. To the surviving author we must offer our congratulations upon the publication of the present edition.

CHARLES E. BESSEY

THE UNIVERSITY OF NEBRASKA

*The Mathematical Theory of Heat Conduction.* By L. R. INGERSOLL and O. J. ZOBEL. Ginn & Co., Boston. 171 pages.

The accurate solution of problems in heat transmission has been neglected in the past by engineers. They have been content to arrive at approximate results by empirical methods or by guessing. With the increased use